47. Nucleic acid sequence according to claim 45, wherein the nucleic acid sequence comprises a range of at least 1500 nucleotides upstream of the TATA box of the sequence represented in SEQ.ID. No. 1.

48. Nucleic acid sequence according to claim 45, wherein the nucleic acid sequence comprises the sequence represented in SEQ.ID. No. 1.

49. Nucleic acid sequence coding for a both tapetum-specific and pollen-specific promoter, the nucleic acid sequence comprising the sequence represented in SEQ.ID. No. 2.

50. Nucleic acid sequence coding for a both tapetum-specific and pollen-specific promoter, the nucleic acid sequence comprising the sequence represented in SEQ.ID. No. 3.

51. Expression system, comprising at least one nucleic acid coding for a both tapetum-specific and pollen-specific promoter, the nucleic acid sequence comprising a range of at least 900 nucleotides upstream of the TATA box of the sequence represented in SEQ.ID. No. 1.

52. Expression system according to claim 51, further comprising at least one terminator and/or a linker.

53. Nucleic acid construct, comprising a nucleic acid sequence according to claim 45 and at least part of an expressible nucleic acid sequence selected from the group comprising expressible nucleic acid sequences, which code for translation products,

which have a direct or indirect action and functional nucleic acids.

54. Nucleic acid construct according to claim 53, wherein the part of the expressible nucleic acid sequence or the complete expressible sequence is connected in the sense direction with the nucleic acid sequence according to claims 45.

55. Nucleic acid sequence according to claim 53, wherein the expressible nucleic acid codes for an invertase.

56. Nucleic acid construct according to claim 55, characterized in that the part of the nucleic acid sequence of an invertase or the complete sequence of an invertase is connected in the antisense direction with the nucleic acid sequence according to claim 45.

57. Nucleic acid construct according to claim 55, characterized in that the invertase is of the type present in a structure selected form the group comprising anthers, tapetum, pollen precursor cells and pollen.

58. Nucleic acid construct according to claim 53, wherein the invertase comes from the organism or from the plant group including the species into which the nucleic acid construct is to be introduced.

59. Nucleic acid construct according to claim 53, wherein the organism is selected from the group comprising food plants, ornamental plants and medicinal plants.

60. Vector comprising:

a nucleic acid sequence coding for a both tapetum-specific and pollen-specific promoter, the nucleic acid sequence comprising a range of at least 900 nucleotides upstream of the TATA box of the sequence represented in SEQ.ID. No. 1 and/or

an expression system comprising at least one of said nucleic acid sequences, and/or

a nucleic acid construct comprising at least one of said nucleic acid sequences and at least part of an expressible nucleic acid sequence selected from the group comprising expressible nucleic acid sequences, which code for translation products, which have a direct or indirect action and functional nucleic acids.

61. Cell, comprising:

a nucleic acid sequence coding for a both tapetum-specific and pollen-specific promoter, the nucleic acid sequence comprising a range of at least 900 nucleotides upstream of the TATA box of the sequence represented in SEQ.ID. No. 1 and/or

an expression system comprising at least one of said nucleic acid sequences, and/or

a nucleic acid construct comprising at least one of said nucleic acid sequences and at least part of an expressible nucleic acid sequence selected from the group comprising expressible nucleic acid sequences, which code for translation products, which have a direct or indirect action and functional nucleic acids.

62. Cell, characterized in that the cell comprises a nucleic acid sequence according to claim 61, which is a promoter, and a

nucleic acid coding for an inhibitor of an intervase, the promoter controlling the expression of the inhibitor.

63. Cell according to claim 61, wherein the cell is selected from the group comprising pollen cells, pollen precursor cells and tapetum cells.

64. Cell according to claim 61, wherein the cell is an arrested pollen cell.

65. Plant comprising a cell according to claim 61.

66. Plant according to claim 65, wherein the plant is selected from the group comprising food plants, ornamental plants and medicinal plants and is preferably selected from the group comprising rice, maize, potatoes, tomatoes, rape, soya and sugar beet.

67. Plant according to claim 65, wherein the plant is a male, sterile plant and has at least one further modification of its genotype, particularly a modification caused by genetic engineering.

68. Seed of a plant according to claim 65.

69. Hybrid seed, obtainable in that a male, sterile plant according to claim 65 is hybridized with another male, fertile plant and the hybrid seed is obtained from the resulting filial generation.

70. Process for the production of male, sterile plants, wherein a nucleic acid construct according to claim 55 is introduced into a cell, particularly into a plant cell and a plant is produced from said cell.

71. Process according to claim 70, wherein the plant is selected from the group comprising food plants, ornamental plants and medicinal plants and is preferably selected from the group comprising rice, maize, potatoes, tomatoes, rape, soya and sugar beet.

72. Use of a nucleic acid construct according to claim 55, for producing sterile, male plants.

73. A method for expression of a nucleic acid sequence, said method involving a nucleic acid sequence coding for a both tapetum-specific and pollen-specific promoter, the nucleic acid sequence comprising a range of at least 900 nucleotides upstream of the TATA box of the sequence represented in SEQ.ID. No. 1.

74. Restorer plant, characterized in that in one or more of its cells it comprises a nucleic acid coding for a both tapetum-specific and pollen-specific promoter, the nucleic acid sequence comprising a range of at least 900 nucleotides upstream of the TATA box of the sequence represented in SEQ.ID. No. 1 as promoter and a nucleic acid coding for a further invertase, which is controlled by said promoter, the further invertase differing from the cell's own invertase.

75. Restorer plant, wherein in one or more of its cells it comprises a nucleic acid coding for a both tapetum-specific and

pollen-specific promoter, the nucleic acid sequence comprising a range of at least 900 nucleotides upstream of the TATA box of the sequence represented in SEQ.ID. No. 1 as promoter and a nucleic acid coding for a saccharose transport system and which is controlled by said promoter.

76. Restorer plant according to claim 75, wherein in one or more of its cells, it comprises a nucleic acid coding for a both tapetum-specific and pollen-specific promoter, the nucleic acid sequence comprising a range of at least 900 nucleotides upstream of the TATA box of the sequence represented in SEQ.ID. No. 1as promoter and a nucleic acid coding for saccharose synthase and/or cytoplasmically expressed invertase and whose expression is controlled by the promoter.

77. Plant, wherein in one or more of its cells, it comprises a nucleic acid construct according to claim 55 and the cell or cells further comprise a nucleic acid sequence coding for a both tapetum-specific and pollen-specific promoter, the nucleic acid sequence comprising a range of at least 900 nucleotides upstream of the TATA box of the sequence represented in SEQ.ID. No. 1 as promoter and a nucleic acid coding for a further invertase and which is controlled by said promoter, the further invertase differing from the cell's own invertase.

78. Plant, wherein in one or more of its cells, it comprises a nucleic acid construct according to claim 55 and the cell or cells also comprise a nucleic acid sequence coding for a both tapetum-specific and pollen-specific promoter, the nucleic acid sequence comprising a range of at least 900 nucleotides upstream of the TATA box of the sequence represented in SEQ.ID. No. 1 as

promoter and a nucleic acid coding for a saccharose transport system, which is controlled by said promoter.

79. Plant, according to claim 78, wherein in one or more if its cells, it comprises a nucleic acid construct according to claim 78 and the cell or cells also comprise a nucleic acid sequence coding for a both tapetum-specific and pollen-specific promoter, the nucleic acid sequence comprising a range of at least 900 nucleotides upstream of the TATA box of the sequence represented in SEQ.ID. No. 1 as promoter and a nucleic acid coding for saccharose synthase and/or cytoplasmically expressed invertase, whose expression is controlled by the promoter.

80. Plant according to claim 74, wherein the further invertase, differing from the cell's own invertase, is selected from the group of invertases comprising invertases of Saccharomyces cerevisiae and invertases of Zymomonas mobilis.

81. Plant according to claim 75, wherein the saccharose synthase is of a heterologous or homologous origin.

82. Plant according to claim 77, wherein the cytoplasmically expressed invertase is of a homologous or heterologous origin.

83. Plant according to claim 82, wherein the cytoplasmically expressed invertase is of a heterologous origin and is preferably selected from the group of invertases comprising invertases of Saccharomyces cerevisiae and invertases of Zymomonas mobilis.

84. Seed of a plant according to claim 74.

85. A method for in vitro embryogenesis of haploid or diploid or double diploid plants, comprising germinating a seed of claim 84.

86. Fruit, particularly seedless fruit, of a plant according to claim 65.

87. Fruit of a plant according to claim 74.

88. Process for cloning promoters, which are functionally homologous to one of the promoters coding for a both tapetum-specific and pollen-specific promoter, the nucleic acid sequence comprising a range of at least 900 nucleotides upstream of the TATA box of the sequence represented in SEQ.ID. No. 1, characterized by the following steps:

c) cloning anther-specific invertase cDNA by RT-PCR of mRNA from anthers, including optionally using oligonucleotides OIN3 and OIN4,

d) cloning the corresponding promoters.

REMARKS

The specification claims have been amended to conform the original translated specification and claims to U.S. requirements, i.e., appropriate section headers are added and the claims amended in order to eliminate multiple dependent claims and claims improperly depending from multiple dependent claims, and to otherwise conform the claims to U.S. practice. Care has been taken to ensure that no new matter is added to the text.